

Remarks: claims 1 and 3-14 are in condition for allowance

This is in response to the final Office action dated April 17, 2007, in which claims 1 and 3-14 were pending, and were all rejected. The applicants herein provide an amendment to claim 1 and respectfully request that this amendment be entered and the claims considered in light thereof. The applicants respectfully submit that claims 1 and 3-14 are presently in condition for allowance, and request that the Office reconsider and allow these claims in light of the amendment and remarks herein.

Claims 1 and 3-14 constitute patentable subject matter under 35 U.S.C. 101

I. Amendment to claim 1 clarifies application being presently in condition for allowance

Claims 1 and 3-14 were rejected solely under 35 U.S.C. 101 under the assertion that these claims do not constitute patentable subject matter. However, this assertion was based on grounds that are inconsistent with controlling case law, as the applicants discuss below. The applicants herein also amend claim 1 to clarify the subject matter. Claim 1 includes providing an output comprising the DRS in the normal form, such as to another application, as an example for an illustrative embodiment. This constitutes a useful, concrete and tangible result.

As explained in the specification, many conventional applications are configured for natural language information to be input in a predefined structure, while that structure often differs from application to application. Claim 1 defines subject matter that includes (as an example for an illustrative embodiment) a method, implemented at least in part by a computing system, of normalizing a discourse representation structure (DRS), where the method includes to generate a DRS in a normal form, and providing an output comprising the DRS in the normal form, such as to another application, for example. It can make the difference (as an example for an illustrative embodiment) between an application not being able to use a natural language input and not being able to produce its own output based on that input; and an application being able to use a natural language input and being able to produce its own output based on that input. Claim 1 therefore defines a substantial, practical application, not a mere abstract idea, and defines a concrete application that provides reproducible results. Claim 1 therefore provides a useful, concrete, tangible, and “real world” result, and constitutes patentable subject matter under §101.

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II. The rejection is contrary to controlling case law

On page 3 of the Office action, the examiner based the rejection under §101 in part on the assertion that “the claimed limitations describe an algorithmic process, and thus correspond to an abstract idea”. However, this conclusion represents a misstatement of the applicable law; a prolific line of controlling case law makes clear that for a claim to recite an algorithm does not imply that it recites a mere abstract idea. See e.g. *Diamond v. Diehr*, 209 USPQ 1, 8 (S. Ct. 1981) (“...an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection”); *In re Iwahashi*, 12 USPQ2d 1908, 1911 (Fed. Cir. 1989) (“...it is no ground for holding a claim is directed to nonstatutory subject matter to say it includes or is directed to an algorithm. ... The fact that the apparatus operates according to an algorithm does not make it nonstatutory”); *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 22 USPQ2d 1033, 1037 (Fed. Cir. 1992) (“...when the mathematical algorithm is applied in one or more steps of an otherwise statutory process claim... the requirements of section 101 are met”); *In re Alappat*, 31 USPQ2d 1545, 1558 (Fed. Cir. 1994) (*en banc*) (“The fact that the four claimed... elements function to transform one set of data to another through what may be viewed as a series of mathematical calculations does not alone justify a holding that the claim as a whole is directed to nonstatutory subject matter”); *In re Lowry*, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (finding data structures patentable; “More than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory”); *In re Warmerdam*, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994) (finding claim 5 for a machine having a memory that contains data patentable); *In re Beauregard*, 35 USPQ2d 1383, 1384 (Fed. Cir. 1995) (“computer programs embodied in a tangible medium... are patentable subject matter under 35 U.S.C. §101”); *State Street* (“...the mathematical algorithm is unpatentable only to the extent that it represents an abstract idea... to be patentable an algorithm must be applied in a ‘useful’ way... we hold that the transformation of data... constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result’...”); *AT&T Corp. v. Excel Communications, Inc.* (Fed. Cir. 1999) (“...a mathematical algorithm may bring about a useful

application”).¹ See also D. Chisum, *The Patentability of Algorithms*, 47 U. Pitt. L. Rev. 959 (1986).

As discussed in these cases, the law distinguishes between claims directed only to an abstract idea, and claims are directed to a useful, concrete, and tangible result, whether or not an algorithm is recited. This analysis is independent of the question of algorithms in particular and is broadly applicable: any subject matter should be evaluated for patentability for whether or not it is directed to a useful, concrete, and tangible result, and whether or not algorithms are recited is immaterial to that mandate. Therefore, as the case law makes abundantly clear, to simply note that a claim includes an algorithm is not dispositive of, or even notably relevant to, whether the claim recites patentable subject matter.

Furthermore, an “algorithm” itself is a process; an algorithm is defined, for example, as a “process or set of rules used for calculation or problem-solving, esp. with a computer.” *Oxford American Desk Dictionary*, 1998. This was confirmed by the Court of Appeals for the Federal Circuit, which found that “every step-by-step process, be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term. ...it is no ground for holding a claim is directed to nonstatutory subject matter to say it includes or is directed to an algorithm.” *In re Iwahashi*, 12 USPQ2d 1908, 1911 (Fed. Cir. 1989). To assert that an algorithm is per se non-statutory is tantamount to asserting that a process is per se non-statutory – a conclusion decidedly contrary to the language of 35 U.S.C. 101.

On pages 3-4 of the Office action, the examiner provided the remaining basis for the rejection under §101 as whether the claim covers “a §101 judicial exception, or practical application by producing a physical transformation or a tangible result”, and concluded, “No. The final step is the ‘sorting the boxes and box elements’ which is neither a physical transformation nor a tangible result.” However, the applicants respectfully point out that the steps of claim 1, as amended, further include to generate a DRS in a normal form; and providing an output comprising the DRS in the normal form. To compare claim 1 of the present application (as an example for an illustrative embodiment) to the Court’s holding in *State Street*, for

¹ *Lowry* discussed patentable subject matter in terms of §103; claim 5 of *Warmerdam* was discussed in terms of §112; *Beauregard* was discussed in terms of a precedential order of remand memorializing the Commissioner’s concession of the patentee’s position on appeal; though all of these cases are widely interpreted for their relevance to patentable subject matter under §101.

example, the claim constitutes patentable subject matter, because it includes transforming data that represents a specific external subject matter (i.e. discrete dollar amounts in *State Street*), thereby providing transformed data in an output that constitutes a useful, concrete and tangible result that is ready to be used for subsequent purposes (in *State Street* i.e. a final share price momentarily fixed for recording and reporting purposes and relied on by regulatory authorities and in subsequent trades). Claim 1 therefore provides a tangible result, no less than the claims at issue in *State Street* or *AT&T* also provided tangible results, as confirmed by the Court.

The rejection of claims 1 and 3-14 under §101 is therefore not consistent with the law and should be withdrawn.

Claims 1 and 3-14 constitute patentable subject matter under 35 U.S.C. 101

III. Reply to examiner's response to applicants' prior remarks

On page 2 of the Office action, the examiner comments that "transforming a discourse representation structure into a different form is merely a transformation from data to data, not a physical transformation". However, the controlling case law makes clear not only that transforming data may be patentable, as in *State Street*; but furthermore, that even whether there is a transformation at all (let alone a distinction between data transformation or physical transformation) is not a requirement, but rather just one example of how a useful result or application may be brought about. MPEP §2106(IV)(C)(2)(2).

Furthermore, a transformation of data does in fact also constitute a physical transformation, such as a physical transformation of electrical or magnetic states within a computer memory (as an example for an illustrative embodiment). This is supported by the Court of Appeals for the Federal Circuit in *Lowry*: "More than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory. ...Lowry's data structures are physical entities that provide increased efficiency in computer operation." *In re Lowry*, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

On pages 2-3 of the Office action, the examiner also comments that "a tangible result must be a 'real world' result and generating a DRS in a normal form is not a 'real world' result." It is well worth examining the context of this analysis: the interpretation of §101 in the Interim Guidelines for Patent Subject Matter Eligibility and in the MPEP in terms of a "real

world” result comes from *Arrhythmia*, in which the Court of Appeals for the Federal Circuit said, “Of importance is the significance of the data and their manipulation in the real world, i.e., what the computer is doing.” MPEP 2106(II)(B); *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 22 USPQ2d 1033, 1036 (Fed. Cir. 1992). The Court made this comment in establishing that a claimed process of computer-aided steps had a specific, or “real world” result in that it did not pre-empt a mere mathematical algorithm. Similarly, claim 1 of the present application does not pre-empt a mere mathematical algorithm, but instead provides a specific, real world result, such as by providing an output comprising the DRS in the normal form, as one aspect of the entirety of the elements as claimed. The MPEP also relies on “‘real world’ value” as another interpretation of the requirement for a useful, concrete, and tangible result, as opposed to a mere idea or concept. MPEP 2106(II)(A). As noted above, claim 1 defines subject matter with a specific “real world value”, rather than a mere idea or concept, and eminently constitutes patentable subject matter under §101.

Claims 1 and 3-14 are in condition for allowance

The applicants thereby submit that the present application is presently in condition for allowance, and respectfully request that the examiner allow claims 1 and 3-14.

The foregoing remarks are intended to assist the Office in examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered exhaustive of the facets of the invention which are rendered patentable, being only examples of certain novel features and differences, which the applicants have opted to comment on as illustrative examples.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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